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(54) **SYSTEM AND METHOD FOR PRESERVING INK VISCOSITY IN INKJETS IN AN INKJET PRINTER DURING PRINTING**

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B41J 29/377 (2006.01)
B41J 2/14 (2006.01)

(52) **U.S. Cl.**
CPC ***B41J 2/165*** (2013.01); ***B41J 2/16579*** (2013.01); *B41J 2/14153* (2013.01); *B41J 29/377* (2013.01); *B41J 2002/16502* (2013.01); *B41J 2202/02* (2013.01)

(58) **Field of Classification Search**
CPC B41J 2/165; B41J 2/16579; B41J 2/14153; B41J 29/377; B41J 2002/16502; B41J 2202/02
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,571,996	B2	8/2009	Domoto et al.	
9,527,286	B2 *	12/2016	Sakata	B41J 2/155
9,840,101	B2 *	12/2017	Sekimoto	B41J 29/377
2014/0168313	A1	6/2014	Ramesh et al.	
2021/0187948	A1	6/2021	Praharaj et al.	
2021/0187953	A1	6/2021	Liu et al.	

* cited by examiner

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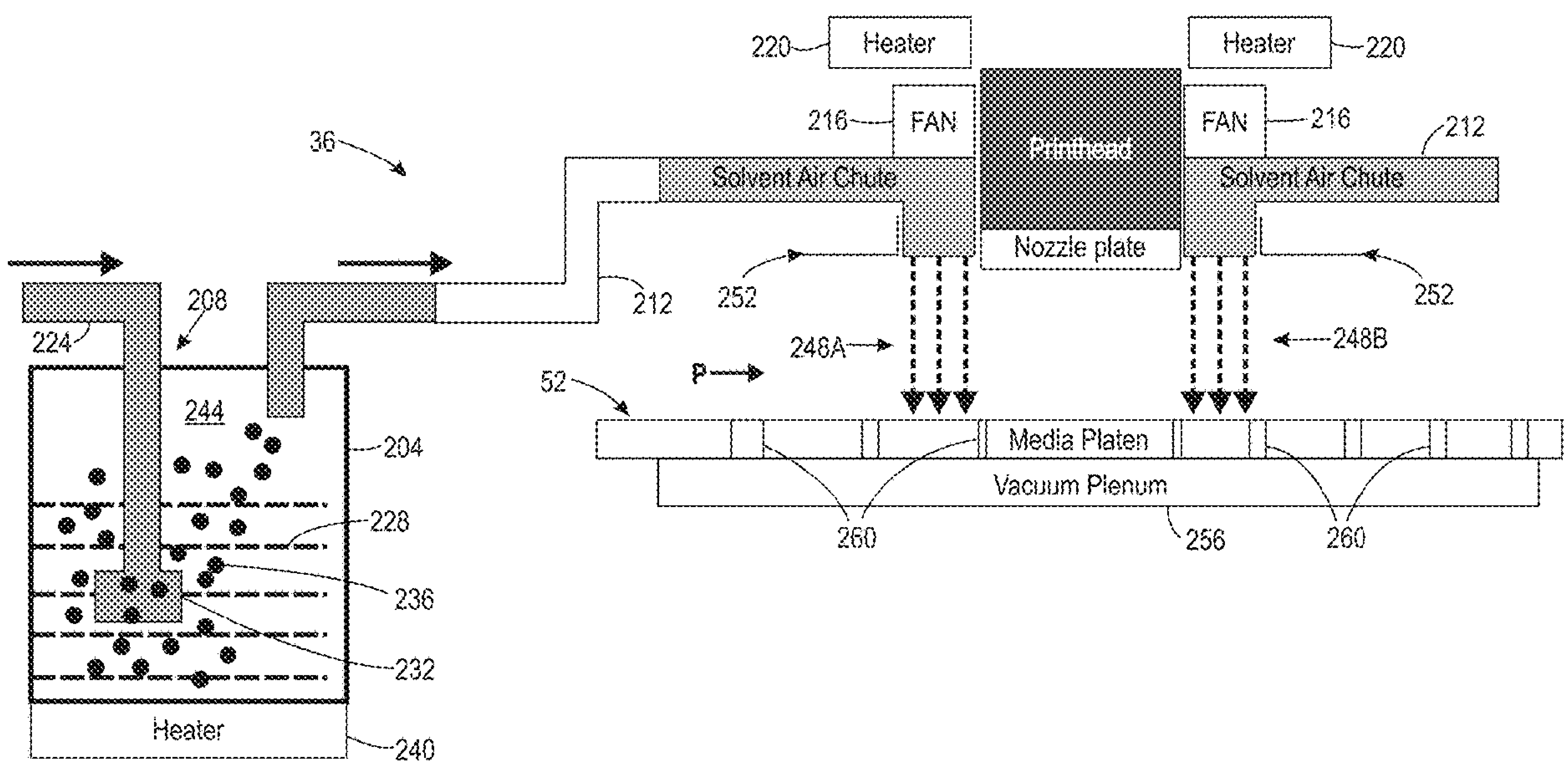
(57) **ABSTRACT**

An inkjet printer includes solvent vapor generators that direct two flows of solvent vapor on each side of each printhead in the process direction toward media passing the printheads in the printer. The solvent vapor attenuates the evaporation of ink solvent from ink drops on the nozzle plates or from the ink in the nozzles of the printheads. Thus, the ink on the nozzle plates and in the nozzles does not dry out and the operational status of the inkjets is preserved.

15 Claims, 5 Drawing Sheets



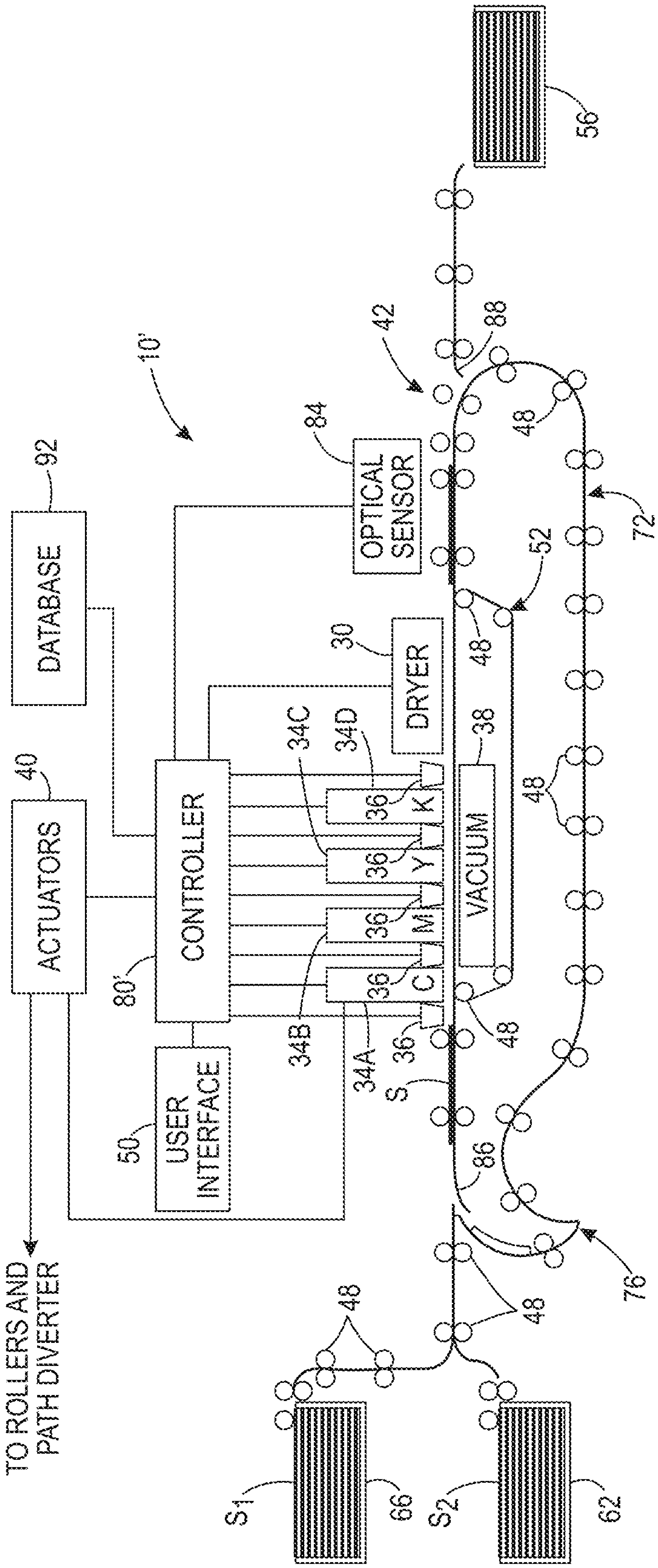

10'
ACTUATORS
40
CONTROLLER
80'
DATABASE
92
USER INTERFACE
50
OPTICAL SENSOR
84
DRYER
30
VACUUM
38
34A
34B
34C
34D
36
C
M
Y
K
S
48
52
42
88
86
72
76
56
66
62
S1
S2
TO ROLLERS AND PATH DIVERTER

FIG. 1

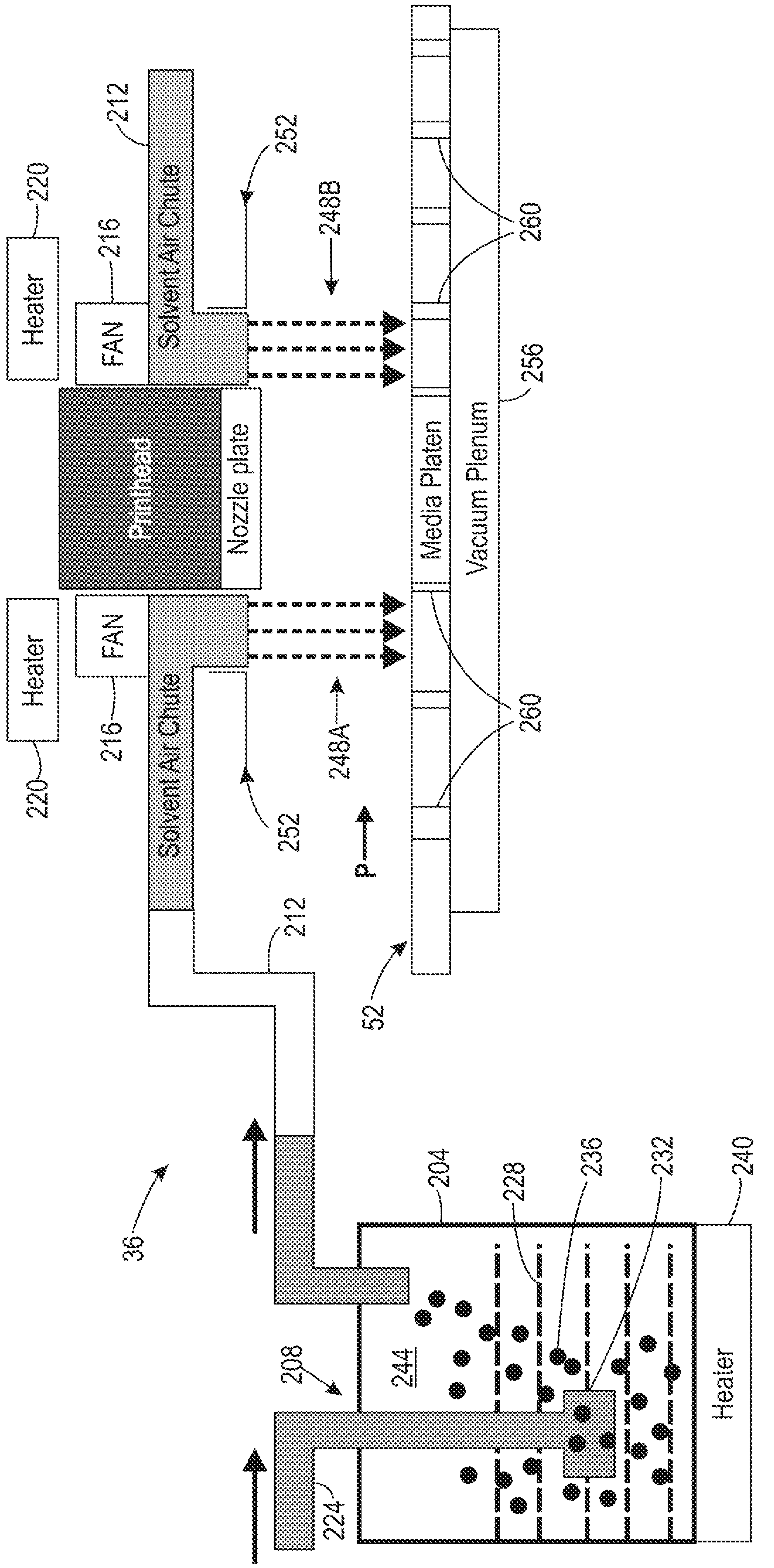

Heater
FAN
Solvent Air Chute
Printhead
Nozzle plate
Media Platen
Vacuum Plenum
Heater
220
216
212
252
248B
248A
256
260
P
52
36
204
208
224
228
236
232
240
244

FIG. 2

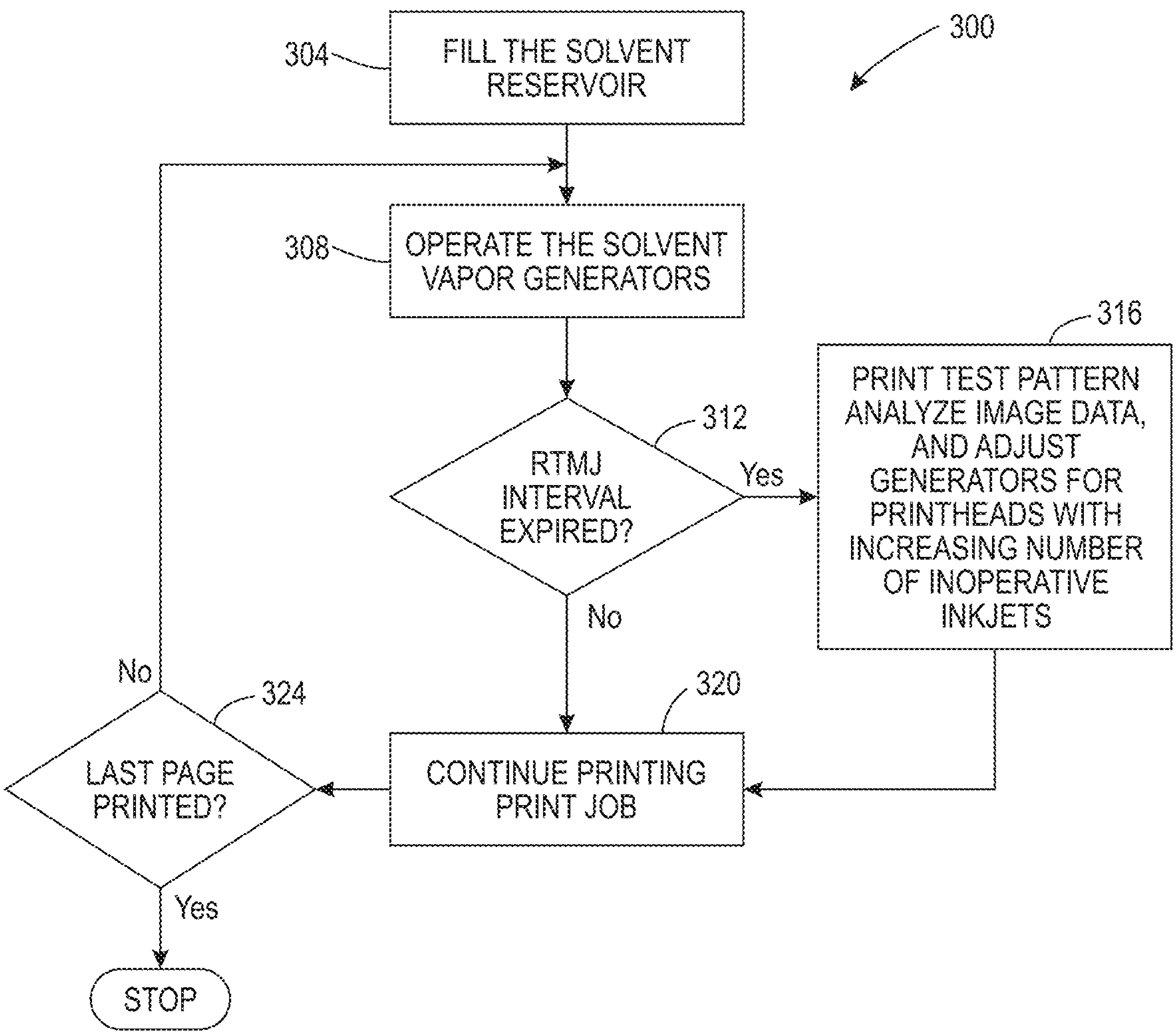

300
304
FILL THE SOLVENT RESERVOIR
308
OPERATE THE SOLVENT VAPOR GENERATORS
312
RTMJ INTERVAL EXPIRED?
Yes
No
316
PRINT TEST PATTERN ANALYZE IMAGE DATA, AND ADJUST GENERATORS FOR PRINTHEADS WITH INCREASING NUMBER OF INOPERATIVE INKJETS
320
CONTINUE PRINTING PRINT JOB
324
LAST PAGE PRINTED?
No
Yes
STOP

FIG. 3

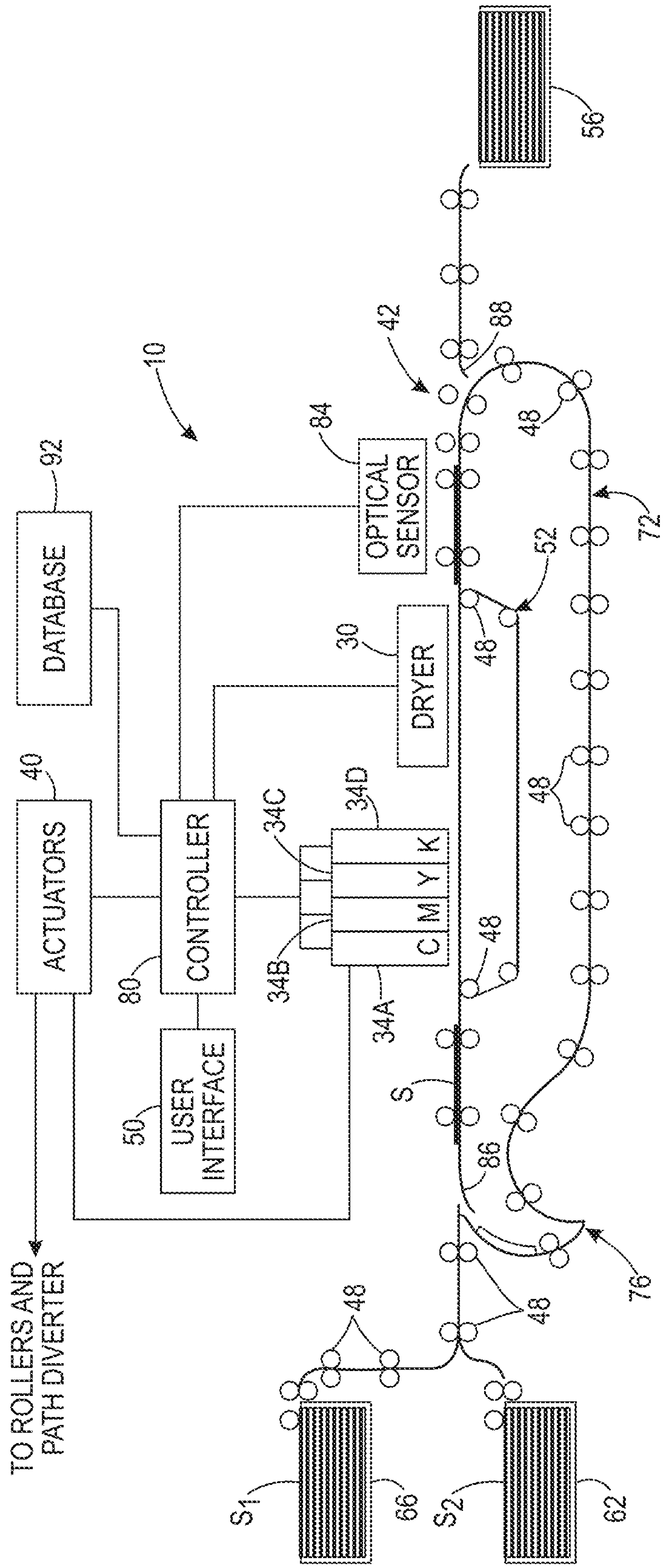


FIG. 4
PRIOR ART

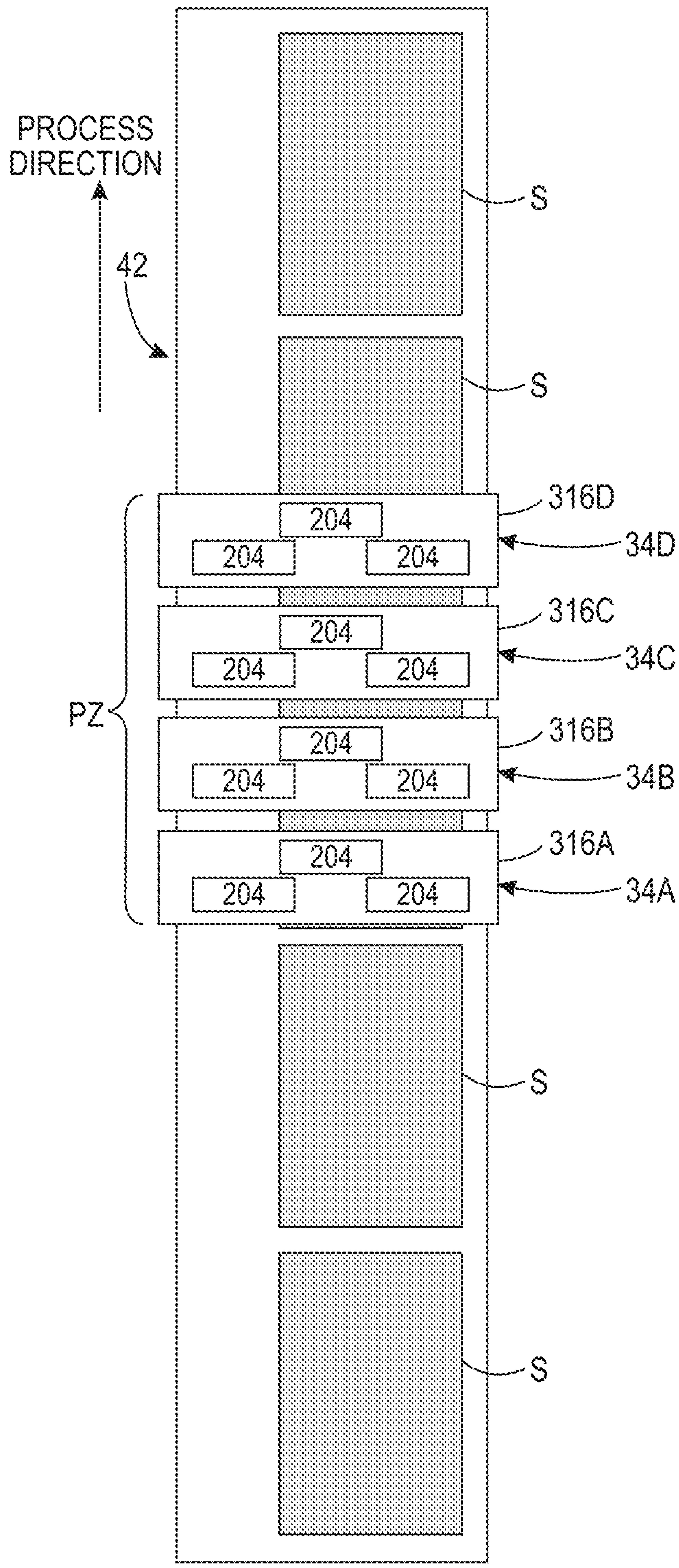


FIG. 5
PRIOR ART

SYSTEM AND METHOD FOR PRESERVING INK VISCOSITY IN INKJETS IN AN INKJET PRINTER DURING PRINTING

TECHNICAL FIELD

This disclosure relates generally to devices that produce ink images on media, and more particularly, to the preservation of ink viscosity in inkjets in such devices during printing.

BACKGROUND

Inkjet imaging devices, also known as inkjet printers, eject liquid ink from printheads to form images on an image receiving surface. The printheads include a plurality of inkjets that are arranged in an array. Each inkjet has a thermal or piezoelectric actuator that is coupled to a printhead controller. The printhead controller generates firing signals that correspond to digital data content corresponding to images. The actuators in the printheads respond to the firing signals by expanding into an ink chamber to eject ink drops onto an image receiving surface and form an ink image that corresponds to the digital image content used to generate the firing signals. The image receiving surface is usually a continuous web of media material or a series of media sheets.

Inkjet printers used for producing color images typically include multiple printhead assemblies. Each printhead assembly includes one or more printheads that typically eject a single color of ink. In a typical inkjet color printer, four printhead assemblies are positioned in a process direction with each printhead assembly ejecting a different color of ink. The four ink colors most frequently used are cyan, magenta, yellow, and black. The common nomenclature for such printers is CMYK color printers. Some CMYK printers have two printhead assemblies that print each color of ink. The printhead assemblies that print the same color of ink are offset from each other by one-half of the distance between adjacent inkjets in the cross-process direction to double the number of pixels per inch density of a line of the color of ink ejected by the printheads in the two assemblies. As used in this document, the term "process direction" means the direction of movement of the image receiving surface as it passes the printheads in the printer and the term "cross-process direction" means a direction that is perpendicular to the process direction in the plane of the image receiving surface.

Image quality in color inkjet printers depends upon at least three parameters: color gamut, graininess, and ink drop satellites. Color gamut can be addressed by using inks that dry faster. The faster drying inks allow more ink to be deposited in the image. The dryers also evaporate the ink more quickly so more ink volume can be dispensed on the media without the ink offsetting to rollers moving the media through the printer.

Graininess, and more specifically overlay graininess, can also be addressed by faster drying inks because the ink drops adhere to the media more quickly so they are immobilized faster. The primary cause of overlay graininess is shear force acting on the ink drops, which increases wet-drop-on-wet-drop interaction that intermixes the ink drops with one another. Thus, decreased mobilization reduces the ink drop interaction and, consequently, overlay graininess.

While faster drying inks improve color gamut and reduce overlay graininess, they also lead to faster ink drying on the nozzle plate and in the nozzles, especially if the inkjets are not operated frequently enough to provide fresh ink to the nozzles. Dry ink on the nozzle plate and in the nozzles leads to inoperative inkjets. As used in this document, the term "inoperative inkjet" means inkjets that do not eject ink drops at all or inkjets that eject ink drops in a direction away from the normal between an inkjet nozzle and the ink receiving surface. This problem occurs with fast drying inks more frequently in low ink coverage areas during long run prints. Low ink coverage areas occur where some inkjets are not used for a relatively long period of time so the ink in these nozzles are more prone to dry in the nozzles. Users of color inkjet printers do not accept high rates of inoperative inkjets resulting from low ink coverage areas in long print runs. Preserving the viscosity of quick drying inks in inkjet nozzles, particularly in inkjet nozzles positioned in low ink coverage areas, would be beneficial.

SUMMARY

A color inkjet printer is configured to attenuate the drying of inks, especially fast drying inks, in the nozzles of inkjets in the printheads of the printer. The color inkjet printer includes at least one printhead configured to eject drops of ink, a conveyor configured to move media past the at least one printhead to receive ink drops ejected from the at least one printhead, and a pair of solvent vapor generators for each printhead in the at least one printhead, the solvent vapor generators in the pair of solvent vapor generators for each printhead are positioned on opposite sides of each printhead in a process direction, and each solvent vapor generator in each pair of solvent vapor generators are configured to direct a flow of solvent vapor with a positive pressure toward the conveyor.

A method of operating a color inkjet printer attenuates the drying of inks, especially fast drying inks, in the nozzles of inkjets in the printheads of the printer. The method includes moving media past at least one printhead to receive ink drops ejected from the at least one printhead, and directing a first stream and a second stream of solvent vapor with a positive pressure toward the media passing the at least one printhead, the first stream and the second stream being on opposite sides in the process direction of the at least one printhead.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing aspects and other features of a color inkjet printer and color inkjet printer operational method that attenuates the drying of inks, especially fast drying inks, in the nozzles of inkjets in the printheads of the printer are explained in the following description, taken in connection with the accompanying drawings.

FIG. **1** is a schematic drawing of a color inkjet printer that reduces the likelihood of ink drying in the inkjets of the printheads.

FIG. **2** is a side view of one printhead in one of the printhead modules of the printer shown in FIG. **1** that depicts the bubbler that generates solvent laden air and the discharge of the solvent laden air on either side of the printhead in the process direction.

FIG. **3** is a flow diagram of a process for operating the printer of FIG. **1** so the likelihood of ink drying in the inkjets of the printheads in the printer is reduced.

FIG. **4** is a schematic drawing of a prior art color inkjet printer in which image quality is adversely impacted by the use of faster drying inks.

FIG. **5** depicts the print zone in the printer of FIG. **4**.

DETAILED DESCRIPTION

For a general understanding of the environment for the printer and the printer operational method disclosed herein as well as the details for the printer and the printer operational method, reference is made to the drawings. In the drawings, like reference numerals have been used throughout to designate like elements. As used herein, the word "printer" encompasses any apparatus that ejects ink drops onto different types of media to form ink images.

The printer and method described below uses a positive flow of solvent laden air on both sides of a printhead in the process direction to provide solvent vapor to the print zone to prevent or slow the drying of ink on the printhead nozzle plate or in the inkjet nozzles. The solvent vapor has been shown to improve the reliability of the printhead inkjets by reducing the number of inoperative inkjets that occur in the printheads used to print low ink coverage areas even when fast drying inks are used in the printheads.

FIG. **4** depicts a prior art high-speed color inkjet printer **10** that does not reduce the likelihood of fast drying inks losing their viscosity in inkjets used to print low ink coverage areas during long print runs. As illustrated, the printer **10** is a printer that directly forms an ink image on a surface of a media sheet stripped from one of the supplies of media sheets S_1 or S_2 and the sheets S are moved through the printer **10** by the controller **80** operating one or more of the actuators **40** that are operatively connected to rollers or to at least one driving roller of conveyor **52** that comprise a portion of the media transport **42** that passes through the print zone PZ (shown in FIG. **5**) of the printer. In one embodiment, each printhead module has only one printhead that has a width that corresponds to a width of the widest media in the cross-process direction that can be printed by the printer. In other embodiments, the printhead modules have a plurality of printheads with each printhead having a width that is less than a width of the widest media in the cross-process direction that the printer can print. In these modules, the printheads are arranged in an array of staggered printheads that enables media wider than a single printhead to be printed. Additionally, the printheads within a module or between modules can also be interlaced so the density of the drops ejected by the printheads in the cross-process direction can be greater than the smallest spacing between the inkjets in a printhead in the cross-process direction. Although printer **10** is depicted with only two supplies of media sheets, the printer can be configured with three or more sheet supplies, each containing a different type or size of media.

The print zone PZ in the prior art printer **10** of FIG. **4** is shown in FIG. **5**. The print zone PZ has a length in the process direction commensurate with the distance from the first inkjets that a sheet passes in the process direction to the last inkjets that a sheet passes in the process direction and it has a width that is the maximum distance between the most outboard inkjets on opposite sides of the print zone that are directly across from one another in the cross-process direction. Each printhead module **34**A, **34**B, **34**C, and **34**D shown in FIG. **5** has three printheads **204** mounted to one of the printhead carrier plates **316**A, **316**B, **316**C, and **316**D, respectively.

As shown in FIG. **4**, the printed image passes under an image dryer **30** after the ink image is printed on a sheet S. The image dryer **30** can include an infrared heater, a heated air blower, air returns, or combinations of these components to heat the ink image and at least partially fix an image to the web. An infrared heater applies infrared heat to the printed image on the surface of the web to evaporate water or solvent in the ink. The heated air blower directs heated air using a fan or other pressurized source of air over the ink to supplement the evaporation of the water or solvent from the ink. The air is then collected and evacuated by air returns to reduce the interference of the dryer air flow with other components in the printer.

A duplex path **72** is provided to receive a sheet from the transport system **42** after a substrate has been printed and move it by the rotation of rollers in an opposite direction to the direction of movement past the printheads. At position **76** in the duplex path **72**, the substrate can be turned over so it can merge into the job stream being carried by the media transport system **42**. The controller **80** is configured to flip the sheet selectively. That is, the controller **80** can operate actuators to turn the sheet over so the reverse side of the sheet can be printed or it can operate actuators so the sheet is returned to the transport path without turning over the sheet so the printed side of the sheet can be printed again. Movement of pivoting member **88** provides access to the duplex path **72**. Rotation of pivoting member **88** is controlled by controller **80** selectively operating an actuator **40** operatively connected to the pivoting member **88**. When pivoting member **88** is rotated counterclockwise as shown in FIG. **3**, a substrate from media transport **42** is diverted to the duplex path **72**. Rotating the pivoting member **88** in the clockwise direction from the diverting position closes access to the duplex path **72** so substrates on the media transport move to the receptacle **56**. Another pivoting member **86** is positioned between position **76** in the duplex path **72** and the media transport **42**. When controller **80** operates an actuator to rotate pivoting member **86** in the counterclockwise direction, a substrate from the duplex path **72** merges into the job stream on media transport **42**. Rotating the pivoting member **86** in the clockwise direction closes the duplex path access to the media transport **42**.

As further shown in FIG. **4**, the printed media sheets S not diverted to the duplex path **72** are carried by the media transport to the sheet receptacle **56** in which they are be collected. Before the printed sheets reach the receptacle **56**, they pass by an optical sensor **84**. The optical sensor **84** generates image data of the printed sheets and this image data is analyzed by the controller **80**. The controller **80** is configured to detect streakiness in the printed images on the media sheets of a print job. Additionally, sheets that are printed with test pattern images are inserted at intervals during the print job. These test pattern images are analyzed by the controller **80** to determine which inkjets, if any, that were operated to eject ink into the test pattern did in fact do so, and if an inkjet did eject an ink drop whether the drop landed at its intended position with an appropriate mass. Any inkjet not ejecting an ink drop it was supposed to eject or ejecting a drop not having the right mass or landing at an errant position is called an inoperative inkjet in this document. The controller can store data identifying the inoperative inkjets in database **92** operatively connected to the controller. These sheets printed with the test patterns are sometimes called run-time missing inkjet (RTMJ) sheets and these sheets are discarded from the output of the print job. A user can operate the user interface **50** to obtain reports displayed on the interface that identify the number of inoperative inkjets and the printheads in which the inoperative inkjets are located. The optical sensor **84** can be a digital camera, an array of LEDs and photodetectors, or other devices configured to generate image data of a passing surface. As already noted, the media transport also includes a duplex path that can turn a sheet over and return it to the transport prior to the printhead modules so the opposite side of the sheet can be printed. While FIG. **4** shows the printed sheets as being collected in the sheet receptacle, they can be directed to other processing stations (not shown) that perform tasks such as folding, collating, binding, and stapling of the media sheets.

Operation and control of the various subsystems, components and functions of the machine or printer **10** are performed with the aid of a controller or electronic subsystem (ESS) **80**. The ESS or controller **80** is operatively connected to the components of the printhead modules **34**A-**34**D (and thus the printheads), the actuators **40**, and the dryer **30**. The ESS or controller **80**, for example, is a self-contained computer having a central processor unit (CPU) with electronic data storage, and a display or user interface (UI) **50**. The ESS or controller **80**, for example, includes a sensor input and control circuit as well as a pixel placement and control circuit. In addition, the CPU reads, captures, prepares, and manages the image data flow between image input sources, such as a scanning system or an online or a work station connection (not shown), and the printhead modules **34**A-**34**D. As such, the ESS or controller **80** is the main multi-tasking processor for operating and controlling all of the other machine subsystems and functions, including the printing process.

The controller **80** can be implemented with general or specialized programmable processors that execute programmed instructions. The instructions and data required to perform the programmed functions can be stored in memory associated with the processors or controllers. The processors, their memories, and interface circuitry configure the controllers to perform the operations described below. These components can be provided on a printed circuit card or provided as a circuit in an application specific integrated circuit (ASIC). Each of the circuits can be implemented with a separate processor or multiple circuits can be implemented on the same processor. Alternatively, the circuits can be implemented with discrete components or circuits provided in very large scale integrated (VLSI) circuits. Also, the circuits described herein can be implemented with a combination of processors, ASICs, discrete components, or VLSI circuits.

In operation, image content data for an image to be produced are sent to the controller **80** from either a scanning system or an online or work station connection for processing and generation of the printhead control signals output to the printhead modules **34**A-**34**D. Along with the image content data, the controller receives print job parameters that identify the media weight, media dimensions, print speed, media type, ink area coverage to be produced on each side of each sheet, location of the image to be produced on each side of each sheet, media color, media fiber orientation for fibrous media, print zone temperature and humidity, media moisture content, and media manufacturer. As used in this document, the term "print job parameters" means non-image content data for a print job and the term "image content data" means digital data that identifies an ink image to be printed on a media sheet.

Using like reference numbers to identify like components, FIG. **1** depicts a high-speed color inkjet printer **10'** in which solvent vapor generators **36** direct solvent laden air on both sides of each printhead to maintain the viscosity of ink on nozzle plates and in the nozzles of inkjets. A single generator **36** is depicted between adjacent printheads in the print zone in order to simplify the figure; however, two generators can be provided in the process direction with one generator producing solvent vapor for the preceding printhead in the process direction and the other generator producing solvent vapor for the next printhead in the process direction. This configuration is shown in FIG. **2**, with each printhead having two generators **36** between the printheads **34**A and **34**B, for example, so printhead **34**A has a generator **36** after the printhead **34**A in the process direction and printhead **34**B has a generator **36** before the printhead **34**B in the process direction. As described in more detail below, the generators **36** are fluidly connected to bubblers to receive solvent laden air and fans push this solvent laden air down to the media transport on both sides of each printhead in the printhead modules **34**A, **34**B, **34**C, and **34**D in the process direction. For a printer having a single printhead, two solvent vapor generators are positioned on each side of the printhead in the process direction to provide the solvent laden air for the nozzles of the printhead.

A solvent vapor generator **36** is shown in more detail in FIG. **2**. In FIG. **2**, the generator **36** includes a solvent reservoir **204**, a bubbler **208**, a chute **212**, a fan **216**, and in some embodiments, a heater **220**. The solvent reservoir **204** is a vessel having an internal volume configured to hold an ink solvent or a mixture of ink solvents. The ink solvents can include, but are not limited to, water, hexanediol, butanediol, and propanediol, which are ink solvents commonly used in aqueous inkjet printers. In embodiments in which inks having different solvents are used, the fluid in the reservoir is a mixture of the various solvents in some appropriate ratio. In one embodiment, the ratio of the different solvents is 1:1:1. An inlet **224** of the bubbler **208** supplies air into the solvent reservoir **204** below the surface of the solvent **228**. As the air is emitted from the bubbler outlet **232**, it produces bubbles **236** that form a solvent vapor in the head space **244** of the reservoir **204**. As the fan **216** blows air into the chute **212**, the exiting solvent laden air flow **248**A pulls more solvent laden air from the head space **244**. This solvent laden air **248**A is directed to the side of the printhead first encountered in the process direction P. Heater **220** is provided in some embodiments to heat the air that is pushed by the fan **216**. The warmer air is able to hold more solvent vapor. Also, in some embodiments, a heater **240** heats the solvent reservoir **204** to increase the solvent vapor pressure in the head space **244**. Manifold walls **252** are positioned on opposite sides of the printheads in the process direction. The outlet end of the chute **212** is positioned in the gap between manifold walls **252** and the sides of the printhead in the process direction P. These walls have a length in the cross-process direction that correspond to the length of the printhead sides in the cross-process direction and help prevent the dissipation of the solvent laden air before it reaches the media sheets. In one embodiment, the gap between the manifold walls and the printhead sides is about 0.5 mm.

A solvent vapor generator **36** is also provided on the side of the printhead last encountered in the process direction P. Although only the chute **212**, the fan **216**, and optional heater **220** are shown for this generator **36** in FIG. **2**, it also includes a bubbler **208** configured as described above. This solvent vapor generator produces the solvent laden air flow **248**B. In other embodiments, however, the chute **212** fluidly connects the head space **244** of the reservoir **204** to the fan **216** on the opposite side of the printhead so only a single solvent reservoir is required for each printhead. In other embodiments, a single solvent reservoir supplies solvent vapor to both sides of all of the printheads in a single printhead assembly. As used in this document, the term "solvent vapor generator" means any combination of components that produce solvent vapor and direct the vapor to at least one side of a printhead aligned in the cross-process direction. As used in this document, the term "bubbler" means any device that directs air flow beneath a surface of a volume of liquid to produce bubbles in the liquid.

Opposite the printheads in the print zone and positioned within the conveyor **52** is a vacuum plenum **256** that is operatively connected to a vacuum (not shown). The negative air pressure within the plenum **256** pulls air from the opposite of the conveyor **52** through the holes **260**. This force helps hold media to the conveyor **52** as the media is being printed. A relatively short distance separates the leading edges of the media sheets from the trailing edges of the media sheets in the process direction. In these gaps between the media sheets, sometimes called an inter-document zone, the vacuum pulls the air between the sheets in this gap. The pull of this vacuum and the positive air flow from the chute **212** helps direct some of the solvent laden air on the back side of a printhead in a direction opposite to the process direction P. This interaction helps ensure that the inkjets nearer the side of the printhead last encountered in the process direction P have an adequate supply of solvent laden air.

Fans **216** in some embodiments are operatively connected to the controller **80'** so the speed of the fans can be regulated. As noted previously, some printers from time to time print RTMJ sheets and the optical sensor **84** generates image data of these sheets printed with a test pattern. The controller **80'** analyzes the printed test patterns on these sheets to identify inoperative inkjets. If the number of inoperative inkjets for a printhead is increasing, then the controller **80'** adjusts the speed for one or both of the fans in the generators **36** on either side of the printhead in the process direction P to increase the amount of solvent laden air in the portion of the print zone opposite that printhead. Additionally, the heaters **220** for the generators **36** can also be operatively connected to the controller **80'** for independent control of these heaters. In addition to adjusting the speed of the fans **216**, the heaters **220** can be adjusted by the controller **80'** to increase the amount of solvent laden air in the portion of the print zone opposite a printhead.

The solvent laden air produced by the generators **36** permeates the portions of the print zone opposite the printheads. This solvent vapor prevents or attenuates the evaporation of solvent from the ink on the nozzle plates of the printheads or the ink in nozzles of the printheads. Thus, the ink does not dry and produce inoperative inkjets, especially when the inks are fast drying or the inkjets are used to print low coverage areas in long print runs.

FIG. **3** depicts a flow diagram for a process **300** that operates the solvent vapor generators **36** in the printer **10'** to maintain a solvent vapor environment in the print zone of the printer. In the discussion below, a reference to the process **300** performing a function or action refers to the operation of a controller, such as controller **80'**, to execute stored program instructions to perform the function or action in association with other components in the printer. The process **300** is described as being performed with the printer **10'** of FIG. **1** for illustrative purposes.

The process **300** of operating the printer **10'** begins with the filling of the reservoir with a solvent or a solvent mixture and operation of the bubbler to produce solvent laden air in the head space of the solvent reservoir (block **304**). The fans of the solvent vapor generators are operated to urge solvent laden air into the portions of the print zone opposite the printheads (block **308**). Upon detection of the expiration of a predetermined period of time (block **312**), the process prints a RTMJ sheet (block **316**). The printed test pattern is analyzed and the operation of any solvent vapor generator corresponding to a printhead having an increase in the number of inoperative inkjets is adjusted (block **320**). The process continues until the last sheet is printed (block **324**). At that point, the process is finished.

It will be appreciated that variants of the above-disclosed and other features, and functions, or alternatives thereof, may be desirably combined into many other different systems or applications. Various presently unforeseen or unanticipated alternatives, modifications, variations, or improvements therein may be subsequently made by those skilled in the art, which are also intended to be encompassed by the following claims.

What is claimed is:

1. An inkjet printer comprising:

at least one printhead configured to eject drops of ink;

a conveyor configured to move media past the at least one printhead to receive ink drops ejected from the at least one printhead; and

a pair of solvent vapor generators for each printhead in the at least one printhead, the solvent vapor generators in the pair of solvent vapor generators for each printhead are positioned on opposite sides of each printhead in a process direction, and each solvent vapor generator in each pair of solvent vapor generators is configured to direct a flow of solvent vapor with a positive pressure toward the conveyor and each solvent vapor generator in each pair of solvent vapor generators further comprises:

a bubbler configured to generate solvent vapor; and

a first source of positive air pressure that directs the generated solvent vapor toward a portion of the conveyor opposite the printhead between the solvent vapor generators in the pair of solvent vapor generators for each printhead.

2. The inkjet printer of claim **1**, the bubbler for each solvent vapor generator further comprising:

a reservoir configured to hold a volume of liquid solvent;

a second source of positive air pressure that directs air into the volume of liquid solvent; and

a chute that fluidly connects a space above the volume of liquid solvent in the reservoir to the first source of positive air pressure.

3. The inkjet printer of claim **2**, the bubbler for each solvent vapor generator further comprising:

a second heater configured to heat the volume of solvent in the reservoir.

4. The inkjet printer of claim **3** wherein the first positive air source for each solvent vapor generator is a fan.

5. The inkjet printer of claim **4**, the conveyor further comprising:

an endless belt configured to rotate about rollers to move the media past the at least one printhead, the endless belt having a plurality of holes extending through the endless belt; and

a plenum positioned within the endless belt, the plenum being configured to connect to a negative source of air pressure and pull air through the holes in the endless belt.

6. The inkjet printer of claim **5** further comprising:

an optical sensor configured to generate image data of the media after the media has passed the at least one printhead; and

a controller operatively connected to the at least one printhead and the optical sensor, the controller being configured to:

operate the at least one printhead to form a test pattern with ejected drops of ink on the media passing the at least one printhead;

analyze image data generated by the optical sensor of the test pattern formed on the media to identify inoperative inkjets in the at least one printhead; and

adjust operation of at least one solvent vapor generator using the identification of the inoperative inkjets in the at least one printhead.

7. The inkjet printer of claim **6**, the controller being further configured to adjust the at least one solvent vapor generator by adjusting a speed of the flow of the solvent vapor toward the conveyor.

8. The inkjet printer of claim **6**, the controller being further configured to adjust the at least one solvent generator by adjusting a temperature of the flow of the solvent vapor toward the conveyor.

9. The inkjet printer of claim **1**, each solvent vapor generator further comprising:

a first heater configured to heat air directed by the first positive air source toward the portion of the conveyor opposite each printhead in the at least one printhead.

10. An inkjet printer comprising:

at least one printhead configured to eject drops of ink;

a conveyor configured to move media past the at least one printhead to receive ink drops ejected from the at least one printhead;

a pair of solvent vapor generators for each printhead in the at least one printhead, the solvent vapor generators in the pair of solvent vapor generators for each printhead are positioned on opposite sides of each printhead in a process direction, and each solvent vapor generator in each pair of solvent vapor generators are configured to direct a flow of solvent vapor with a positive pressure toward the conveyor;

each solvent vapor generator in the pair of solvent vapor generators for each printhead further comprising:

a bubbler configured to generate solvent vapor;

a first source of positive air pressure that directs the generated solvent vapor toward a portion of the conveyor opposite the printhead between the solvent vapor generators in the pair of solvent vapor generators for each printhead; and

a first heater configured to heat air directed by the first positive air source toward the portion of the conveyor opposite each printhead in the at least one printhead; and

each bubbler further comprising:

a reservoir configured to hold a volume of liquid solvent;

a second source of positive air pressure that directs air into the volume of liquid solvent;

a second heater configured to heat the volume of solvent in the reservoir; and

a chute that fluidly connects a space above the volume of liquid solvent in the reservoir to the first source of positive air pressure.

11. The inkjet printer of claim **10** wherein the first positive air source for each solvent vapor generator is a fan.

12. The inkjet printer of claim **11**, the conveyor further comprising: an endless belt configured to rotate about rollers to move the media past the at least one printhead, the endless belt having a plurality of holes extending through the endless belt; and a plenum positioned within the endless belt, the plenum being configured to connect to a negative source of air pressure and pull air through the holes in the endless belt.

13. The inkjet printer of claim **12** further comprising:

an optical sensor configured to generate image data of the media after the media has passed the at least one printhead; and

a controller operatively connected to the at least one printhead and the optical sensor, the controller being configured to:

operate the at least one printhead to form a test pattern with ejected drops of ink on the media passing the at least one printhead;

analyze image data generated by the optical sensor of the test pattern formed on the media to identify inoperative inkjets in the at least one printhead; and

adjust operation of at least one solvent vapor generator using the identification of the inoperative inkjets in the at least one printhead.

14. The inkjet printer of claim **13**, the controller being further configured to adjust the at least one solvent vapor generator by adjusting a speed of the flow of the solvent vapor toward the conveyor.

15. The inkjet printer of claim **14**, the controller being further configured to adjust the at least one solvent generator by adjusting a temperature of the flow of the solvent vapor toward the conveyor.

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